REMARKS

Claims 1-16 are pending in the application. Reconsideration and allowance of claims 1-16 are respectfully requested.

Prior Art Rejection under 35 U.S.C. § 103(a)

Claims 1-6 and 10-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent number 5,828,361 to Gibson in view of U.S. patent number 6,369,911 to Hattori and further in view of U.S. publication number 2002/9967509 to Roylance. Claims 7-9 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gibson in view of Roylance.

Claim 1

Claim 1 is directed to a printing system comprising a host machine and a printing device. The host machine includes an application to generate page data at a predetermined bit rate per plane per pixel, an image processor, based on image data contained in a pixel or a group of pixels in the page data, to render interim data that contains a multi-bit value per plane per pixel including print engine control information for the pixel or the group of pixels to effect print quality enhancements, and an I/O device to communicate the interim data. The printing device includes an I/O device to communicate the interim data, a pulse code generator, to receive the interim data, for each multi-bit value, and to generate a pulse code corresponding to the multi-bit value, and a print engine to receive the pulse codes and to transform the pulse codes to a hardcopy image.

The Office Action cited Gibson's system for transmitting images to a display device as a host machine, Hattori's apparatus for generating pulse width data for a toner-transfer-type printing apparatus as a printing device, and Roylance's resolution enhancement. The Office Action then asserts that one of ordinary skill in the art at the time the invention was made would have found it obvious to combine the teachings of Gibson, Hattori, and Roylance to arrive at the invention of claim 1. Applicants traverse this rejection for at least the following reasons.

The Prior Art Does Not Teach All of the Features of Claim 1

Claim 1 recites a host machine including an image processor to render interim data that contains a multi-bit value per plane per pixel including print engine control information for the pixel or the group of pixels to effect print quality enhancements.

The Roylance Reference

The Office Action asserts that Roylance discloses print engine control information for the pixel or the group of pixels to effect print quality enhancements, and further emphasizes that the resolution procedure takes control of the enhancement mode selection before the raster image is sent to the laser print engine (Office Action, p. 5). However, the print engine control information relied on by the Office Action occurs in the printer. *See* ¶¶, [0028]-[0030]. An important distinction should be made between the print engine and the printer. While the procedure in Roylance occurs before the raster image is sent to the laser print engine, it does not occur before the data is sent to the printing device.

Because Roylance involves control in a laser printer, there is no indication of a host machine. Therefore, Roylance, either alone in or in combination with Gibson and Hattori, does not teach or suggest a host machine including an image processor to render interim data that contains a multi-bit value per plane per pixel including print engine control information for the pixel or group of pixels to effect print quality enhancements.

The Gibson Reference

Claim 1 recites a host machine including an application to generate page data. The Office Action asserts that Gibson teaches a host machine including an application to generate page data, citing Figure 4 and col. 4, line 65 – col. 5, line 2. However, there is no indication in the portion cited by the Office Action or elsewhere in Gibson of an application to generate page data. To the contrary, Gibson relates to the data structures and color mapping arrays that form each plane in a display device, as shown in Figures 12A-12C. *See* col. 4, line 65 – col. 5, line 7.

Further, Hattori is relied upon for a printing device and does not teach or suggest an application to generate page data, and Roylance is relied upon for resolution enhancement. Therefore, none of the cited prior art, either alone or in combination as set forth by the Office

Action, teach or suggest a host machine including an application to generate page data as required by claim 1.

For these reasons, it is respectfully requested that the rejections of claims 1-3 be withdrawn.

The Proposed Modification of Gibson Changes the Principle Operation of the Reference

It is well established that a *prima facie* case for obviousness under 35 U.S.C. § 103(a) cannot be made if the proposed modification changes the principle operation of the reference. M.P.E.P. §2143.01(VI.) states, "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). The court in *Ratti* reversed a rejection because the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." *See* M.P.E.P. §2143.01(VI.) (citing 270 F.2d at 813, 123 USPQ at 352).

Gibson is a method and system for rapidly transmitting multicolor or gray scale display data having multiple bits per pixel to a display device (col. 1, ll. 14-18). No part of Gibson indicates the invention is for use in any type of device besides a display device. Gibson makes no mention of a printer or a printing device.

Nonetheless, the Office Action attempts to modify Gibson with a printing device "to enhance the resolution of an image so that the number of the gray scale levels, which can be expressed, is reduced in inverse proportion to the resolution of the image required to be printed." (Office Action, pp. 4-5).

Applicants respectfully submit that modifying Gibson in the manner proposed by the Office Action would change Gibson's principle operation. If the raster data in Gibson were modified in such a way to make it suitable for a printing device, it would no longer be operable for use with a display. In other words, the modification would destroy the intended purpose of Gibson. Therefore, the Office Action has not made a *prima facie* case of obviousness for claims 1-3 and the rejection should be withdrawn.

The Office Action Uses Impermissible Hindsight

Congress explicitly requires in 35 U.S.C. § 103(a) that obviousness must be viewed, "at the time the invention was made." This is to avoid the use of impermissible hindsight. *See* M.P.E.P. §2141.01, III. The Office Action asserts that it would have been obvious to combine Gibson and Hattori (Office Action, p. 5), and it would have been obvious to combine Gibson and Hattori with Roylance to obtain the invention as specified in claim 1 (Office Action, p. 6).

However, at the time the invention was made, one of ordinary skill in the art would have had no motivation or reason to modify Gibson's system for transmitting images to a display device as a host machine with a printing device including a pulse code generator and a print engine. It is respectfully submitted that the Office Action has used Applicants' disclosure and claim as a roadmap to create the proposed modification. For example, Applicants' Specification sets forth at page 2, "the processing required to generate high quality print output is shifted from the printing device to the host machine." None of the prior art demonstrate a teaching, suggestion, motivation, or reason to shift the processing to the host machine as required by claim 1.

In other words, impermissible hindsight is the only explanation to modify the display device system of Gibson with the printing device of Hattori and resolution enhancement of Roylance. Therefore, the rejection of claim 1-3 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 4

Claim 4 is directed to a method for rendering a hardcopy image. The method requires on a host machine, based on the pixel data, rendering data to interim multi-bit values per plane per pixel interim value, the rendered data including print engine control information for the pixel or the group of pixels to effect print quality enhancements when rendering a hardcopy image.

For the reasons discussed above with respect to claim 1, none of the cited prior art teaches or suggests a method for rendering a hardcopy image including, on a host machine, rendering data that includes print engine control information. Further, for the reasons discussed above with respect to claim 1, the modification of Gibson with Hattori and Roylance is improper.

Therefore, the rejection of claim 4-6 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 7

Claim 7 is directed to a host machine. The host machine includes an image processor to receive the page data, to examine pixel data for a pixel or a group of pixels in the page data, either for individual pixels or in relation to neighboring pixels, and to render interim data that contains a multi-bit value per plane per pixel, the interim data including print engine control information for the pixel or the group of pixels to effect print quality enhancements when rendering a hardcopy image based on the page data.

For the reasons discussed above with respect to claim 1, none of the cited prior art teaches or suggests a host machine including an image processor to render interim data that contains a multi-bit value per plane per pixel, the interim data including print engine control information for the pixel or the group of pixels to effect print quality enhancements when rendering a hardcopy image based on the page data. Further, for the reasons discussed above with respect to claim 1, the modification of Gibson with Hattori and Roylance is improper.

Therefore, the rejection of claim 7-9 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 10

Claim 10 is directed to a printing system comprising a host machine and a printing device. The host machine includes means for generating page data at a predetermined but rate per plane per pixel, processor means for receiving the page data and for rendering interim data based on image data contained in a pixel or a group of pixels in the page data, the interim data containing a multi-bit value per plane per pixel and print engine control information for the pixel or the group of pixels to effect print quality enhancements when rendering a hardcopy image, and I/O means for communicating the interim data.

For the reasons discussed above with respect to claim 1, none of the cited prior art teaches or suggests a host machine including processor means for rendering interim data containing a multi-bit value per plane per pixel and print engine control information. Further, for the reasons discussed above with respect to claim 1, the modification of Gibson with Hattori and Roylance is improper.

Therefore, the rejection of claim 10-12 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 13

Claim 13 is directed to a method for rendering a hardcopy image. The method includes rendering data to interim multi-bit values per plane per pixel, the interim multi-bit values including print engine control information for the pixel or the group of pixels to effect print quality enhancements in a hardcopy image.

For the reasons discussed above with respect to claim 1, the modification of Gibson with Hattori is improper. Specifically, one of ordinary skill in the art at the time of the invention would not have modified the method and system for rapidly transmitting multicolor or gray scale display data having multiple bits per pixel to a display device because that would destroy the principle operation of Gibson, which is prohibited in a *prima facie* case for obviousness according to M.P.E.P. §2143.01(VI.). Further, even if such a modification were possible as asserted by the Office Action, no evidence has been provided of a teaching, suggestion, motivation, or reason to replace a display with a printer, and impermissible hindsight guided by Applicants' disclosure is the only explanation for the proposed modification.

Therefore, the rejection of claims 13-15 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 16

Claim 16 is directed to a host machine including means for receiving the page data and rendering interim data that contains a multi-bit value per plane per pixel, the interim data including print engine control information for the pixel or the group of pixels, the print engine control information to effect print quality enhancements in a hardcopy image to be rendered based on the page data.

For the reasons discussed above with respect to claim 1, none of the cited prior art teaches or suggests a host machine including means for rendering interim data that contains a multi-bit value per plane per pixel and print engine control information. Further, for the reasons discussed above with respect to claim 1, the modification of Gibson with Hattori and Roylance is improper.

Therefore, the rejection of claim 16 under 35 U.S.C. § 103(a) should be withdrawn.

CONCLUSION

In view of the arguments above, Applicants respectfully submit that all of the pending claims 1-16 are in condition for allowance and seek an early allowance thereof. If for any reason, the Examiner is unable to allow the application in the next Office Action and believes that an interview would be helpful to resolve any remaining issues, the Examiner is respectfully requested to contact the undersigned at (312) 840-3225.

Respectfully submitted,

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